

Claims

1. Modulation device for laser radiation, comprising at least one modulation means (3) which can change at least in part the laser radiation (1) which passes through the modulation device, characterized in that the modulation device comprises beam splitter means (2) which can split the laser radiation (1) into at least two component beams of radiation, that the device furthermore in the direction of beam propagation downstream of the beam splitter means (2) comprises beam combining means (6) which can recombine at least two of the component beams of radiation, and that at least one modulation means (3) is located between the beam splitter means (2) and beam combining means (6) such that at least one of the component beams can be changed by at least one modulation means (3) such that the laser radiation (1) which has been combined by the beam combining means (6) or in the area of the beam combining means (6) at least in a given area of space has the desired modulation as a result of the interference of at least two component beams.

2. Modulation device as claimed in claim 1, wherein the laser radiation has at least in sections in a first direction (Y) which is perpendicular to the middle direction (Z) of propagation a greater divergence than in a second direction (X) which is perpendicular to the middle direction (Z) of propagation and to the first direction (Y), the separation into component beams taking place in the first direction (Y).

3. Modulation device as claimed in claim 1 or 2, wherein the beam splitter means (2) are made as a prism, especially as an at least partially mirrored prism.

4. Modulation device as claimed in one of claims 1 or 2, wherein the beam splitter means

are also made as a partially transparent mirror.

5. Modulation device as claimed in one of claims 1 to 4, wherein the beam combining means (6) are made as a prism, especially as an at least partially mirrored prism.

6. Modulation device as claimed in one of claims 1 to 5, wherein the beam combining means are made as a partially transparent mirror.

7. Modulation device as claimed in one of claims 1 to 6, wherein at least one modulation means (3) can change at least one component beam of radiation such that it undergoes a concerted phase shift of at least one of its component rays, especially by half the wavelength of the laser radiation.

8. Modulation device as claimed in one of claims 1 to 7, wherein the modulation means (3) are made as a modulator which is to be operated in reflection, especially as a GLV modulator.

9. Modulation device as claimed in one of claims 1 to 7, wherein the modulation means (3) are made as a modulator which is to be operated in transmission.

10. Modulation device as claimed in one of claims 1 to 9, wherein the modulation means (3) are made as a two-dimensional modulator with which laser radiation which is incident on it can be modulated with respect to two directions which are essentially perpendicular to one another.

11. Modulation device as claimed in one of claims 1 to 10, wherein an interferometer is formed by the beam splitter means (2), the modulation means (3) and the beam combining means (6).

12. Modulation device as claimed in one of claims 1 to 11, wherein in the direction (Z) of beam propagation downstream of the beam combining means (6) there is a diaphragm (8) which

can mask out parts of the laser radiation (1) corresponding to the modulation which is to be achieved.

13. Modulation device as claimed in claim 12, wherein in the direction (Z) of beam propagation upstream and/or downstream of the diaphragm (8) there are lens means, especially cylinder lenses (7, 9) which can focus the laser radiation (1) onto the diaphragm (8) and/or following the diaphragm (8) can re-collimate the focussed laser radiation.